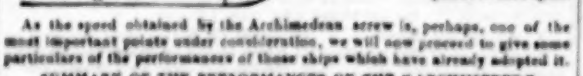


FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

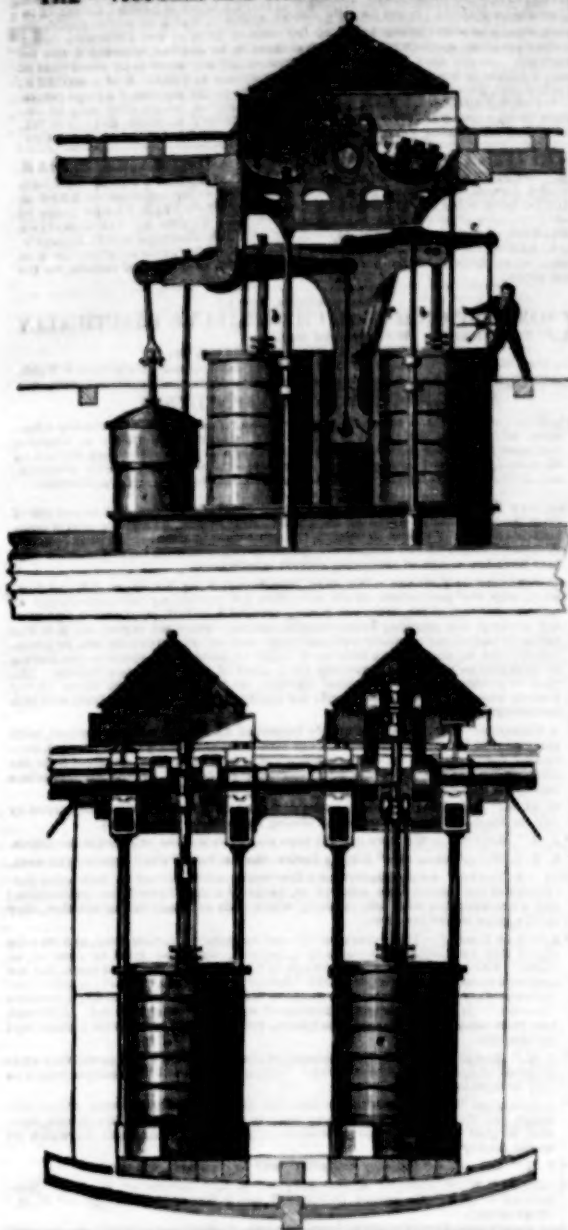
[PRICE 6D.]

THE SCREW PROPELLER—SMITH'S PATENT.

measurements, it was a growth of stress waves. This is particularly worthy of mention, as showing the utility of a different stress gauge on hardening tests. In case of stress or modulus tests, while the consideration of

[illegible]

THE "VICTORIA AND ALBERT" YACHT ENGINES.



We are indebted to our contemporary, the *Mechanics' Magazine*, for the accompanying cuts, to illustrate the description of the engines on board the Royal yacht, which are on the double cylinder plan, patented by Messrs. Mandley and Field, and which possess considerable advantages—viz., simplicity of construction, more direct action on the crank, less weight of material, and a great saving of space.—*a a* are two cylinders, each of half the necessary area for the intended power; *b b* the pistons, which are connected to the top of a T-shaped cross-head, *c c*, working in guide-rings, *e e*, by a slider, *d*, to which is affixed the connecting-rod, *f*; the other end being attached to the crank, *g*, of the paddle-wheel shaft. It will be seen by this arrangement, that, from the simultaneous ascent and descent of the two pistons, the rods, *b b*, will cause the cross-heads to move perpendicularly between the guide-bars, and, consequently, by the rod and crank, give motion to the propelling shaft. The steam is admitted and withdrawn from these cylinders by one slide valve, common to both, through a pipe, in the ordinary way; and there is a narrow communication between the cylinders, always open, for the purpose of keeping the steam at all times at equal pressure in both. The paddle wheels are a modification of Morgan's plan, and we shall probably, in an early number, give a full description of them. It is evident that the greatest care has been taken to combine all the known improvements in steam navigation in this vessel, as she boasts every thing propelled by either wind or steam that attempts to compete with her.

ADMISSION OF AIR TO FURNACES OF STEAM-ENGINES.

Experiments for ascertaining the Quantity of Air which enters the Fire-places of the Cornish Steam-Engines, &c. Part II. By Robert Hunt (secretary of the society).—Mr. Hunt states, that it was thought desirable that a few additional particulars should be obtained; and these he now hoped he had in his power, in several instances, to supply. The author then states, that he has found it impracticable to ascertain the variable effects of the admission of larger or smaller quantities of air to the fire, on the duty of the steam-engine, because of his inability to obtain the sole control of a steam-engine for a few weeks; he had learned, however, from some of the most experienced engineers in Cornwall, that the admission of an additional quantity of air, with the view of increasing the rate of combustion, had not been followed with anything like a corresponding increase of duty, and in some instances on actual falling off in the duty of the engine had been the result. The combustible burnt fast or slow (says Mr. Hunt) according as it is supplied with air in greater or less rapidity—the quantity of heat developed by the same quantity of coal being always the same; if this heat is given out by supplying a given number of cubic feet of atmospheric air in three minutes, we should not, if we supplied the same measure of air in five minutes, increase the quantity of heat, although we increase the intensity. The more important question, however, is, whether the volume of air admitted to the furnace is sufficient to maintain the most favourable condition of combustion required by the Cornish engines. With respect to this, Mr. Hunt says, that experience has shown that the method adopted by our engineers certainly secures a sufficient quantity of air to the fire-places; but it is not so clearly made out that more than enough is not admitted, and, with a view of ascertaining as correctly as possible this point, I have repeated the experiments of the former paper with very great care. The disadvantage of admitting too much air appears to be the cooling influence it exerts on the coals in a state of low combustion, and at the same time on the boiler walls, reducing it of heat, and carrying it off through the flues to the stack. It became desirable to know if the air, after it had passed the flues, still contained a sufficient quantity of oxygen to maintain combustion; the result of a great many experiments has shown me that a small quantity of available oxygen still remains in the air. In two quantities of atmospheric air a taper burnt sometimes five times and often six times as long as it burnt in the air collected from the flues of the engines at Truro and of North Bovey; but still a sufficient quantity of oxygen remained to keep up for a short time the flame of the taper, and to support, although feebly, a bright red wax, when plunged into it. The result of these experiments appeared, in the whole, to prove that experience had guided the Cornish engineers to admit that small quantity of combustion which was the most economical, consistently with the duty of the steam-engine. It was, however, suggested, that modes of supplying air, taught by the experience of the steam, might be adopted, which would have the effect of improving the combustion of the coal, without at all reducing the cylinder of the heat; by some such arrangement, there is but little doubt that a slight increase of duty could be economically obtained.—*Transactions of the Royal Cornwall Polytechnic Society.*

COMMUNICATION BETWEEN LONDON AND PARIS.

In the *Mining Journal* of the 9th of September last we noticed a description of a plan for the improvement of Shoreham Harbour, by which the removal of the bar would be effected, and facilities for the navigation secured, by W. B. Frithard, Esq., C.E. In connection with this subject, the same gentleman has prepared an address to the shareholders of the London and Brighton Railway, showing how, with the harbour improvements, and some alterations in the present method of conducting the traffic, the journey from London to Paris might be uniformly performed in fifteen hours, and, in fact, render that line the highway to the French metropolis. The whole distance by this route is 255 miles, total time twenty hours, and charge 31. 13s.; while by the Southampton Railway, Havre de Grace, and Rouen, the distance is 241 miles, time twenty-eight hours, and fares 31. 6s. 6d.; and by the South-Eastern Railway, and Boulogne and Amiens, 265 miles, time twenty-two hours, and charge 31. 1s. This statement shows upon the face of it the advantages by the Brighton line, and which are only prevented being availed of by the continental travelling public in consequence of the want of managerial and regularity in the starting of the steam boats in connection with the arrival of the trains at Shoreham, and their total inefficiency, and required displacement by powerful, fast, and well-appointed packets. Mr. Frithard states that the evils which have given to this route the worst character are, in a great measure, produced by the division of the responsible bodies directing its interests, but principally owing to the bad condition of Shoreham Harbour, the commissioners of which care little about the amount of passenger traffic, provided the vessels run, and the enormous fees at present exacted are paid. To avoid the present irregularity of the system, when out of the numerous steam-boats arriving every hour of the day only three of them will catch the trains, he recommends that all the continental passengers should start from the London Bridge station at seven o'clock every morning, the train to perform the distance in one hour and a half, or thirty-three miles per hour—arriving at Shoreham Harbour at nine, Disper at half-past two, Rouen at six, and Paris at ten o'clock, and the same system followed up on the return. To secure certainty and punctuality, the continental carriages, on their arrival at Brighton, should be immediately detached, and an engine kept in readiness to proceed with them direct to the harbour, which would be an additional expense, as a pilot engine is always kept with the steam up, in connection with the Kingston coke ovens; thus time will be gained, and all interference with the Brighton regular traffic avoided. To accomplish the shipment and landing of passengers at all states of the tide, it will be necessary to construct an efficient pier, the want of which is, in a great measure, the principal cause of derangement in the present system, but, with the construction of a proper shipping place, passengers could be shipped or landed at any hour of the day or night; this, with a short single line of rails at Brighton, to facilitate the detachment of the trains, might be completed for about £600. For the purpose of punctuality in the arrivals of the steam-boats corresponding with that of the trains, the company should establish a line of fast, powerful, and efficient first-class steamers, to be built of iron, and drawing from eight to nine feet of water, directly under the management of the Brighton Railway Company—thus obtaining entire control over the arrangements, and securing a vast increase of traffic, particularly of continental travellers, and produce not only a handsome return for the outlay, but add considerably to the dividends on the present capital. For raising funds to carry out these desirable improvements, he recommends a subscription by the present shareholders of 2l. per share, to be placed in trust with the directors, who should have power to make the necessary arrangements for carrying the objects into execution. With reference to fares, though the route via Brighton is at present the lowest in respect of charges, low fares being a subject in which such public attention is being directed, he recommends that one ticket should clear an individual to Disper by the first-class and after cabin for 11. 2s., and fore cabin and second-class 10s., which, including cost of French railway, would give a clear gain over the Southampton, Folkestone, and Dover routes, of 20s. 6d., 20s. 6d., and 21s. 6d., respectively. The capabilities of this route once developed, goods, packages, parcels, &c., could be delivered in London, Rouen, Disper, Havre, &c., at half the price at which they could be conveyed by any other route, and, by the aid of the steam boats, excursion parties might be put up for places along the coast, the Channel Islands, &c., which, from the low fares at which they could be done, would cause much attraction, and eventually the Government would, most probably, establish the Post-office communication on this "highway to Paris."

Worcester and Cardiff Railway.—The estimates for this line of eighty miles of railway, which were laid before the meeting at Morley Tyddell on the 21st August last, by Mr. E. Powell, engineer, of Brecon (and fully detailed and commented upon in the *Mining Journal* at the time), having been accepted by a correspondent of the *Standard*, who signs "An Engineer," to be erroneous, and the railway itself would be, and one which will never make a return for the capital expended, Mr. Powell, in a long communication, dated the 9th inst., shows that he has omitted nothing in his estimates, but rather taken them at the very maximum cost, and that from the nature of the line, the great experience in all kinds of railway construction, the whole length of tunnel being under a mile, the reduction in iron rails from 11. 10s. to 11. 10s. per ton, the reduction in the price of manual labour and timber, and the fact of the whole eighty miles passing through the old red sandstone formation, consisting of stratified beds of stone easily quarried and freely dressed on the spot for building the viaducts, bridges, stations, &c., he is fully justified in the view he has taken of the subject, and that the line can, doubtless, be constructed for 14,750l. per mile, and in this calculation iron is charged at 20s. per ton over the present prices. Mr. Powell states that notices to Parliament will immediately be given, and the prospectus published forthwith. "An Engineer" has again replied, dated 10th inst., in which he says the prices of iron, timber, labour, &c., above mentioned, astonish him, and contends that an contractor would be found to undertake works on such calculations. He endeavours to show that experience has not led to anything like the reduction in the cost of railways which Mr. Powell estimates, and, in fact, that lines now in course of formation are very little, if anything, under the cost of other lines which have been long opened—viz., from 21,000l. to 25,000l. per mile; and concludes by assuring the projector that a vigorous opposition will be put up against it, which he trusts will bear the "bubble" even should it have the good fortune to pass the standing orders of the House. How far Mr. Powell is right in his estimated expense, and probability of the line paying interest, can be judged of only by an inspection of the ground passed over, and the nature of the district, and amount of population through which it passes. His statement on these heads appears fair, nor do we think "An Engineer" has advanced anything to shake the soundness of his estimates; that experience has taught greatly to reduce the expenses in the formation of railways, as well as their working costs, we have daily proof, and the reference by "An Engineer" to lines which were in course of construction ten years since can bear but little on the present question. We may return to the subject on the conclusion of the prospectus.

Railroads in America.—In the year 1823, when railways began to be known and duly appreciated, both in this country and America, there were in the latter only 107 miles of railway, while at the present time there are, after the lapse of only eleven years, 1903 miles in connection with the city of Boston alone, and the number of railways completed in the United States reaches the enormous distance of 4500 miles, or equal to about a 5th of the circumference of the globe. On the completion of the contemplated New York and Albany line (140 miles) the whole coast line—excluding, perhaps, 1400 miles—will be connected with the interior, thus presenting one continuous subterranean line of railway of 7200 miles, and covering the most rapid dispatch, and in case of war preventing the most prompt advance of New York, Boston, &c., by the facility with which troops, provisions, ammunition, &c., can be transported from one place to another. The whole of these lines pay upon the average 5 per cent. on the capital employed in their construction, about £100,000,000, or £50,000 per mile. America originally imported all her locomotive-engines from England; they have now 5000 employed, nearly all constructed by themselves; great improvements have being introduced in the permanent ways, by the introduction of the edge rail in place of the flat bar rail, which was generally used, from the necessity of keeping down the cost where capital was scarce, and improved fastenings from the American soil though much less coming into use, which, if they succeed, will stop the importation of British metal for almost every purpose connected with railway construction—in fact, America appears to be making rapid strides in the development of her extraordinary resources, and but few years will pass away ere their abundant introduction will change the features of commercial enterprise in all parts of the world.

A Glass Experiment.—We find the following in the *Huntsdon papers*—The public are informed, that from the 10th of October last, the open carriages will be withdrawn from railways, and covered carriages substituted for them during the winter.

FRUITFUL PATENT.—It is a curious fact in scientific discovery that the most profitable invention that has ever been patented in this or any other country is the one which is not an application to Government to admit sugar for agricultural purposes. The Government applied to Mr. Howard, the accomplished chemist, brother to the late Duke of Norfolk, to try some experiments for the purpose of ascertaining if sugar could be so effectively adulterated that it could not be again recovered for calumny use. For this purpose he mixed all kinds of useless materials with it, but the question remained whether they could be again separated, and in the experiments to ascertain this, he discovered that not only could they be separated, but that the sugar was better and purer. Out of this same Howard's patent for sugar refining and the use of the vacuum pan; the second, and because of which, from 1800 to 1850, he made, for 25 years, at the rate of 1s. per cwt., yielded to some extent between 10,000l. and 20,000l. Our house in London since paid about 100,000l. per annum.

SMOKE NUISANCE.—DIRCKS and CO., FURNACE ARCHITECTS and ENGINEERS, AGENTS for various PATENT and other improvements applying to BOILERS and FURNACES. HEAD OFFICE—77, KING WILLIAM STREET, CITY, LONDON.

AGENTS AND LICENSERS FOR C. W. WILLIAMS'S PATENT SMOKELESS AROUND FURNACES, for land and marine boilers, and all descriptions of close fire places, which has been applied to the land engine furnaces, and put on board twenty-five steamers, in the last eighteen months. C. W. WILLIAMS'S PATENT CONDUCTOR PIPE, for imparting to boilers the power of absorbing the waste heat. ANDREW SMITH'S PATENT RAPID STEAM GENERATOR, affording in the smallest space abundance of steam, without the risk of explosion. BRANCH AGENCY OFFICE—TOWN HALL BUILDINGS, CROSS STREET, MANCHESTER—THOS. BARNETT, 1, Colmore-row, Birmingham.

ARGUS LIFE ASSURANCE COMPANY.

IN THROUGHMORTON STREET, BANG. Empowered by special Act of Parliament, 5 & 6 William IV., cap. 78. THOMAS FARNCOMB, Esq., Actuary, Chairman. WILLIAM LEAF, Esq., Deputy Chairman. Consulting Actuary—Professor Hall, M.A., of King's College.

LOW RATES OF PREMIUM. In addition to the subscribed capital of £100,000, the assured have the security of the company's income of nearly £100,000 per annum, yearly increasing, and an accumulating assurance fund, invested in Government and other available securities, of considerably larger amount than the estimated liabilities of the company. ANNUAL PREMIUM TO ASSURE £100.

Age.	For One Year.	For Seven Years.	Whole Term.
20	40 17 9	40 19 1	41 11 10
30	1 1 0	1 2 7	2 0 7
40	1 5 0	1 6 9	2 14 10
50	1 14 1	1 10 10	2 9 11
60	2 2 4	2 17 0	3 0 10

One-third of the "whole term" premium may remain unpaid at 5 per cent. comp. int., as a debt upon the policy for life, or may be paid off at any time without notice.

The medical officers attend daily at a quarter before 2 o'clock. EDWARD BATES, Resident Director. A liberal commission to collectors and agents.

AUSTRALASIAN COLONIAL AND GENERAL LIFE ASSURANCE AND ANNUITY COMPANY.

Capital £1,000,000, in 100,000 shares. DIRECTORS: Edward Barnard, Esq., F.R.S. Gibson Chisholm, Esq. Henry Duxie, Esq. C. E. Mangin, Esq. Robert Brooks, Esq. Richard Osborn, Esq. John Henry Cooper, Esq. William Walker, Esq. Bankers—Union Bank of London.

COLONIAL BANKERS—Bank of Australasia, (Incorporated by Royal Charter, 1855), No. 2, Moorgate street. No. 2, Moorgate street, Russell-square. SOLICITORS—Messrs. Maples, Pearce, Wynn, and Co. SECRETARY—Edward Rhyer, Esq.

The advantages offered to EMIGRANTS to the Australasian colonies by this company are—First, that no extra premium is charged for residence in any of the Australasian colonies, except in New Zealand. Second, that an extra premium is charged to those who assure for the whole term of life, for one voyage out to the Australasian colonies, and for one return voyage; and that premiums may be paid and claims settled in those colonies. And to all persons who wish to secure their lives, the company offers seasonably favourable rates of premium, participation in profits, and the guarantee of an ample contribution capital. Prospectuses and full particulars may be obtained at the office of the company, 125, Bishopsgate—street, corner of Cornhill.

BRITANNIA LIFE ASSURANCE COMPANY, 1, PRINCE STREET, BANK, LONDON. CAPITAL—ONE MILLION.

This Institution is empowered by a special Act of Parliament, and is constituted so as to afford the benefits of life assurance, in their fullest extent, to policy holders, and to prevent greater facilities and accommodations than can be obtained in other offices. The decision superiority of its plan, and its claim to public preference and support, have been proved, incontestably, by its extraordinary and unprecedented success. Among others, the following important advantages may be enumerated:

A most economical rate of premium—expressly for the use of this company, from authentic and complete data, and presenting the lowest rates of assurance that can be offered without compromising the safety of the Institution. Increasing rates of premium, on a new and remarkable plan for covering losses by death; a less immediate payment being required on a policy for the whole term of life than in any other office.

Premiums payable either annually, half-yearly, or quarterly, in one sum, or in a limited number of payments. A board of directors in attendance daily at Two o'clock. Age of the assured in every case admitted in the policy. All claims payable within one month after proof of death. Medical attendants remunerated in all cases for their reports. Extract from increasing rates of premium, for an assurance of £100 for whole term of life—

Age.	ANNUAL PREMIUMS PAID FOR DURING				
	1st 5 years.	nd 5 years.	3rd 5 years.	4th 5 years.	Remainder of life.
20	41 1 4	41 5 10	41 10 11	41 15 9	42 3 9
30	1 0 4	1 10 3	1 10 1	2 7 4	3 17 0
40	1 10 1	2 0 4	2 10 0	3 7 9	4 9 4
50	2 10 7	3 0 4	4 0 5	5 0 9	6 13 7

Detailed prospectuses, and every requisite information as to the mode of effecting assurance, may be obtained at the office. PETER MURKIN, Resident Director.

EUROPEAN LIFE INSURANCE COMPANY.

No. 10, CHATHAM PLACE, BLACKFRIARS, LONDON. Established, January, 1813. President—Sir JAMES RIVERS CARMAC, Bart. Vice-Presidents—GEORGE FURBER, Esq., 5, Park-square, Regent's-park.

DIRECTORS: Thomas Henry Hall, Esq., 1, Moorgate street, Grosvenor-square. John Rivers Carmac, Esq., 48, Devonshire street, Portland-place. John Gresham Harris, Esq., 6, Old Palace-yard. William Paxton Jarvis, Esq., 10, Chesham-place, Strand-street. Mrs. Philip Leighton, 10, Charlotte-street, Bedford-square. William Bagnall, Esq., Treasury Chambers, White-hall. Frederick Rivers, Esq., 10, James-street, Buckingham-gate. John Stewart, Esq., 21, Portico-square. George James Walker, Esq., Whitehall-park, Admiralty, White. John Fyfe, Esq., 8, Finsbury-place.

FACILITIES are offered by this long established Society to suit the views and the means of every class of insurance. Premiums are received yearly, half yearly, or quarterly, or upon an increasing or decreasing scale.

An assurance of £100 may be effected on the second year by an annual premium, on the first five years, of 41. 1s. 4d., at the age of 20; 41. 15s. 9d. at 30; 41. 17s. 4d. at 40; 41. 20s. 4d. at 50; 41. 25s. 4d. at 60; or one-half only of the usual rate, with interest on the remainder, will be credited for five or seven years, the other half to be paid at the expiration of the assured.

The amount for life participation is in the profits realized.

A liberal commission is allowed to solicitors and agents. DAVID FIDGOLD, Secretary.

N.B.—Agents are wanted in towns where none have been yet appointed.

VICTORIA LIFE ASSURANCE COMPANY.

By J. DICK, Esq., M.P., Chairman. [Hon. Henry, Esq., Deputy-Chairman. [Hon. Barnard, Esq. [Charles Balfour, Esq.]

Premium advantages are offered by this company. First—Parties assuring the lives of others may make their policies secure, notwithstanding the life assured may go out of the limits of Europe, without the necessary permission of the directors having been previously obtained.

Second—Half the premiums for the first five years allowed on policies effected for the whole term of life.

Advantages may be effected with or without profits—on an increasing or decreasing scale, or for short periods.

Advances made to assured on full or uncompleted personal security, for term and increasing three years, &c., payable by instalments.

Attention is particularly invited to the detailed prospectuses of this company, which may be obtained at the office, 10, King William street, City, or by letter, addressed to the Secretary. WILLIAM BATHURST, Secretary & Secretary.

YORK AND LONDON LIFE ASSURANCE COMPANY.

KING WILLIAM STREET, LONDON. Empowered by Act of Parliament.

DIRECTORS: GEORGE FREDERICK YOUNG, Esq., Chairman. MATTHEW FORSTER, Esq., M.P., Deputy-Chairman. Benjamin Agar, Esq. James Austin, Esq. William Baker, Esq. H. B. Bennett, Esq. M.B. Lord Brouncker, Esq. M.P. Matthew Carr, Esq. J. Wakefield Clement, Esq., M.P. Henry Cornhill, Esq. [Hon. John Lubbock, Esq. [Hon. John Lubbock, Esq.]

The superiority of the system of assurance adopted by this company, will be found in the fact that the premiums received by a householder, or assured, at the end of a period in the tabulated part of the age table, in this office, never exceeds 10s. 10d. Assurances at other ages are effected on equally favourable terms, and thus the assured has an immediate benefit instead of a future dependent upon longevity and the profits of the office. In cases of assurance for a limited number of years, the advantages offered by this company will be greater—the part of the profits of a householder being paid to the assured.

NEWLY LARGED SHIPS.—Some new agreements with registered shipbuilders have been made last week on the scale of wages for the American Harbors, Seattle. They were all struck up with the same conditions as in the past, and last time the point of reference. At the same time of time there is more very much to be done, but effective against equality of industry, the transportation, shipping, etc. The additional time in each hour, among the other, the time on the ship or shore, the back and weight being increased nearly so that the work is done as well as possible, and the equality of the work is maintained. The ships were placed at the disposal of the Navy, and the work is done as well as possible. —*Edmund M. M. M.*

TWO CHAS. TRADES—FRENCH CONFRATERS.—We learn from the *Journal* a *fratelle*, that the confederates for supplying French soldiers with gun and the barometers of the Levant, have been adjudged in Mr. Jackson of London, the price of 40s. (3s. 6d. Belgium) to be a *fratelle* *fratelle*. The confederates' *fratelle* *fratelle* has been given to M. Jackson, and that the *fratelle* to M. Jackson of Birmingham.

